



Test Report # T18779-01-1a Issue 1  
EN 397:2012 +A1:2012  
Nantong Lion Safety Equipment Technology Co., Ltd.  
VS3 – Industrial Safety Helmet  
Date Tested: 28 March 2024  
01 April 2024



Approved by:

Jagdesh Sookhdeo  
Head Protection, Hand Protection &  
Athletic Equipment - Laboratory Manager

Prepared by:

Shelley Brady  
Head Protection & Athletic Equipment -  
Laboratory Administrator

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 China

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**Objective:**

Contract testing to EN 397:2012+A1:2012 “European Standards for Industrial Safety Helmets”.

**Sample(s):**

VS3 - Industrial Safety Helmet

Description	Qty	Date Code	Material	Date Received	Sample ID
Yellow Shell (Front Brim Cap) w/ Pin-Lock Suspension (6-8 pt.), Vented w/ Chin Strap (4 pt.)	15	Q1-24 <sup>1</sup>	HDPE	07 February 2024	9A-x
Yellow Shell (Front Brim Cap) w/ Pin-Lock Suspension (6-8 pt.), Vented w/ Chin Strap (2 pt.)	2				9B-x

<sup>1</sup> - Artwork provided

**Procedures:**

Testing protocols in accord with good laboratory practice were employed unless otherwise specified, for all tests.

Testing procedures as specified within Section 6 of EN 397:2012+A1:2012 were followed.

Material listed as shown on product or in attestation from client. The material has not been verified by the lab.

**Equipment:**

Cadex Twin Wire Test Platform  
 Environmental Conditioning Chambers  
 Inspec UV Conditioning Chamber  
 Cadex Impact Software V6.9U  
 EN 960 Headform  
 Admet Universal Tester  
 Hanco Dielectric Strength Chamber

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**Assessment Summary:**

Date Tested: 28 March 2024  
 Tested By: Pete Turpin – Senior Technician

Requirements	Compliant	Non-Compliant
<b>4 Physical Requirements</b>		
4.1 Materials and Construction	X	
4.2 External Vertical Distance	X	
4.3 Internal Vertical Distance	X	
4.4 Internal Vertical Clearance	X	
4.5 Horizontal Distance	X	
4.6 Wearing Height	X	
4.7 Harness	X	
4.7.1 Headband/ Nape Strap	X	
4.7.2 Cradle	Not Applicable	
4.7.3 Comfort Band or Sweatband	X	
4.8 Chin Strap	X	
4.9 Ventilation	X	
4.10 Accessories	X	
<b>5 Physical Requirements</b>		
<b>5.1 Mandatory Requirements</b>		
5.1.1 Shock Absorption	X	
5.1.2 Resistance to Penetration	X	
5.1.3 Flame Resistance	X	
5.1.4 Chin Strap Anchorage	X	
5.1.5 Label	X	
<b>5.2 Optional Requirements</b>		
5.2.1 Very Low Temperature	X	
5.2.2 Very High Temperature *	Not Applicable	
5.2.3 Electrical Properties		
5.2.4 Lateral Deformation		
5.2.5 Molten Metal Splash*		
<b>7 Markings</b>		
7.1 Marking on the Helmet	X	
<b>7.2 Additional Information</b>		
7.2.1	X	
7.2.2	X	
7.2.3	X	

\*Testing subcontracted to an accredited third-party laboratory

Samples as assessed meet the requirements of EN 397:2012+A1:2012.

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**Results:**

**4.1 Materials and Construction; Results: Pass**

As assessed, the helmet included a shell and harness.

As assessed, there are no sharp edges, roughness or projections on any part of the helmet, its accessories or attachment devices that will cause injury to the wearer.

**4.2 External Vertical Distance**

Sample ID	External Vertical Distance (mm)		Pass	Fail
	Headform G	Headform K		
9A-1	46	48	X	
Specifications:	≤ 80			

**4.3 Internal Vertical Distance**

Sample ID	Internal Vertical Distance (mm)		Pass	Fail
	Headform G	Headform K		
9A-1	38	38	X	
Specifications:	≤ 50			

**4.4 Internal Vertical Clearance**

Sample ID	Internal Vertical Clearance (mm)		Pass	Fail
	Headform G	Headform K		
9A-1	38	38	X	
Specifications:	≥ 25			

**4.5 Horizontal Distance**

Sample ID	Horizontal Distance (mm)				Pass	Fail
	Headform G		Headform K			
	Front	Side	Front	Side		
9A-1	25	20	20	15	X	
Specifications:	≥ 5					

**4.6 Wearing Height**

Sample ID	Wearing Height (mm)				Pass	Fail
	Headform G		Headform K			
	Front	Side	Front	Side		
9A-1	95	95	90	92	X	
Specifications:	≥ 88		≥ 90			

80 mm for helmets mounted on headform 525 (D)  
 85 mm for helmets mounted on headform 555 (G)  
 90 mm for helmets mounted on headform 585 (K)

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**4.7 Harness; Results: Pass**

As assessed, the harness includes a headband and nape strap.

**4.7.1 Headband/ Nape Strap; Results: Pass**

As assessed, the length is adjustable in increments of not more than 5 mm.

**4.7.2 Cradle; Results: Not Applicable**

As assessed, if the cradle incorporates textile tapes, their individual widths are not less than 15 mm and the total widths of the tapes radiating from their intersection is not less than 72 mm.

**4.7.3 Comfort Band or Sweatband (if provided); Results: Pass**

As assessed, covers the inner front surface of the headband at a length of not less than 100 mm each side of the center of the forehead

As assessed, the sweatband has a width not less than that of the headband over the length which it covers;  
**Results: Pass**

**4.8 Chin Strap; Results: Pass**

As assessed, the chin strap is not less than 10 mm wide when untensioned and is attached to either the shell or the headband.

**4.9 Ventilation: Pass**

As assessed, the total area of the holes are not less than 150 mm<sup>2</sup> and not more than 450 mm<sup>2</sup>.

**4.10 Accessories; Results: Pass**

As assessed, the required fixing devices, or appropriate holes in the helmet shell are provided by the helmet manufacturer.

**5.1.1 Shock Absorption**

Sample ID	Conditioning (°C)	Force (N)	Observations	Pass	Fail
9A-2	-10 ± 2	3182	1	X	
9A-3	20 ± 2 (Water Immersion)	2556	-	X	
9A-1	50 ± 2	2387	-	X	
9A-4	Artificial Aging	3182	1	X	
Specifications:		≤ 5000			

EN 960 Headform: K

Observations:

(-) No observation

1 – Shell cracked at impact site

**5.1.2 Resistance to Penetration**

Sample ID	Conditioning (°C)	Contact with Headform (No / Yes)	Observations	Pass	Fail
9A-7	-10 ± 2	No	-	X	
9A-8	20 ± 2 (Water Immersion)	No	-	X	
9A-6	50 ± 2	No	-	X	
9A-9	Artificial Aging	No	-	X	
Specifications:		No Contact with Headform Allowed			

EN 960 Headform: K

Observations:

(-) No observation

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**5.1.3 Flame Resistance**

Sample ID	Afterflame (sec)	Observations	Pass	Fail
9A-1	0	-	X	
Specifications:	≤ 5			

Observations:  
 (-) No observation

**5.1.4 Chin Strap Anchorage**

Sample ID	Force (N)	Observations	Pass	Fail
9A-6	222	1	X	
9B-1	158	2	X	
Specifications:	≥ 150 / ≤ 250			

Observations:  
 (-) No observation  
 1 – One front anchorage released  
 2 – Both anchorages released

**5.1.5 Label; Result: Pass**

The label remained attached and legible on each sample helmet after the appropriate conditioning was followed.

**5.2.1 Shock Absorption (Very Low Temperature)**

Sample ID	Conditioning (°C)	Force (N)	Observations	Pass	Fail
9A-5	-30 ± 2	3739	1	X	
Specifications:		≤ 5000			

EN 960 Headform: K

Observations:  
 (-) No observation  
 1 – Shell cracked at impact site

**5.2.1 Resistance to Penetration (Very Low Temperature)**

Sample ID	Conditioning (°C)	Contact with Headform (No / Yes)	Observations	Pass	Fail
9A-10	-30 ± 2	No	-	X	
Specifications:		No Contact with Headform Allowed			

EN 960 Headform: K

Observations:  
 (-) No observation

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**Sample Photographs:**



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**7.1 Helmet Shells; Results: Pass <sup>1</sup>**

Every helmet claimed to comply with the requirements of this European Standard shall carry molded or impressed marking giving the following information:

- a) number of this European Standard;
- b) name or identification mark of the manufacturer;
- c) year and quarter of manufacture;
- d) type of helmet (manufacturer's designation), marked on both the shell and the harness;
- e) size or size range (cm), marked on both the shell and the harness;
- f) abbreviation for the material of the shell in accordance with ISO 472 (i.e., ABS, PC, HDPE, etc.).

**7.2.1 Results: Pass**

A label shall be attached to each helmet giving the following information, provided precisely and comprehensively in the language of the country of sale:

“For adequate protection this helmet must fit or be adjusted to the size of the user’s head.

The helmet is made to absorb the energy of a blow by partial destruction or damage to the shell and the harness, and even though such damage may not be readily apparent, any helmet subjected to severe impact should be replaced.

The attention of users is also drawn to the danger of modifying or removing any of the original component parts of the helmet, other than as recommended by the helmet manufacturer.

Helmets should not be adapted for the purpose of fitting attachments in any way not recommended by the helmet manufacturer.’

Do not apply paint, solvents, adhesives or self-adhesive labels, except in accordance with instructions from the helmet manufacturer”.

**7.2.2 Results: Pass <sup>1</sup>**

Each helmet shall carry molded or impressed marking or shall carry a durable self-adhesive label stating the optional requirements complied with, as follows:

<b>Optional Requirement</b>	<b>Marking/ Label</b>
Very low temperature	-20°C or -30°C,
Very high temperature	+ 150°C
Electrical properties	440 V.a.c.
Lateral deformation	LD
Molten metal splash	MM

**7.2.3 Results: Pass <sup>1</sup>**

The following information, provided precisely and comprehensible in the official language(s) of the country of sale, shall accompany each helmet.

- a) The name and address of the manufacturer
- b) Instructions or recommendations regarding adjustment, fitting, use, cleaning, disinfection, maintenance, servicing and storage. Substances recommended for cleaning, maintenance or disinfection shall have no adverse effect on the helmet and shall not be known to be likely to have any adverse effect upon the wearer, when applied in accordance with the manufacturer’s instructions.
- c) Details of suitable accessories and appropriate spare parts.
- d) The significance of the optional requirements complied with and given in accordance with 7.2.2, and guidance regarding the limits of use of the helmet, corresponding to the respective risks.
- e) Guidance information regarding the obsolescence deadline or period of obsolescence of the helmet and its component parts.
- f) Guidance information regarding details of the type of packaging suitable for transportation of the helmet.

<sup>1</sup> - Artwork provided

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9. Client is responsible for procuring, at its cost, insurance protecting the value of its property, extending to provided samples.
10. For the safety of our personnel, Client must advise if samples are known or suspected to contain hazardous substances. Safety Data Sheets must be provided upon request.
11. ICS represents that Services shall be performed according to terms and specification agreed to by Client, and in a manner consistent with good laboratory practice. No other Representations to client, express or implied, and no warranty or guarantee is included or intended in this agreement, or in any other report or document related to the services. ICS does not guarantee product performance or compliance.
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13. Certain work may be subcontracted to ICS-approved laboratories as required or applicable. Client will be notified of this in advance.
14. Client agrees to pay any and all additional costs associated with unexpected or above-standard communications and/or consultations with Client or third parties as designated by Client.
15. Client agrees to pay any and all additional costs for work additional to the original scope of work as agreed to by Client.
16. Client understands and agrees that ICS, in entering into this Contract and by performing services hereunder, does not assume, abridge, abrogate or undertake to discharge any duty or responsibility of Client to any other party or parties. No one other than Client shall have any right to rely on any Report or other representation or conduct of ICS and ICS disclaims any obligations of any nature whatsoever with respect to such third parties.
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18. Client agrees, in consideration of ICS undertaking to perform the test(s) hereunder, to protect, defend and indemnify ICS from any and all claims, damages, expenses either direct or consequential for injuries to persons or property arising out of or in consequence of the performance of the testing, inspection and reporting hereunder and/or the performance of the products tested or inspected hereunder, unless caused by the negligence of ICS.
19. It is agreed that if ICS should be found liable for any losses or damages attributable to the services hereunder in any respect, its liability shall not exceed the amount of the fee paid by Client for services rendered and Client's sole remedy at law or in equity shall be the right to recover that sum.
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22. In the event that payment is not received within 15 days of invoice date, Client agrees to pay a late payment charge on the unpaid balance equal to 1-1/2% per month or the maximum charge allowed by law, whichever is less, and all costs and expenses, including attorney's fees where recovery of the same is not prohibited by law, incurred by ICS in collecting such invoices.
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24. Cancelled/discontinued orders: Client responsible for all administrative and testing charges up to point of cancellation.

**DECLARATION**

To whom may concern,

Here we Shanghai Harden Tools Co.,Ltd confirm that VS3, the 285mm Safety Helmet, is purchased from Nantong Lion Safety Equipment Technology Co., Ltd. It is the same product as HARDEN 780602(yellow), 780603(white), 780604(orange), 780605(blue).

If you have any questions, please contact us freely.

Best Regards,

Shanghai Harden Tools Co.,Ltd

2025.7.22

